

Adjacent State and Private Lands/Structures

Introduction

This section covers the potential direct, indirect, and cumulative effects to adjacent State and private lands and structures from the implementation of the Longley Meadows Fish Habitat Enhancement Project (Longley Meadows).

Affected Environment

The existing geomorphic and vegetation conditions have been heavily influenced by previous land use activities, resulting in degraded instream habitat complexity for Chinook salmon, steelhead, bull trout, and other sensitive aquatic species.

The existing geomorphic condition of the Grande Ronde River (GRR) within the project area is characterized as unconfined with a relatively straight planform and riffle run morphology consisting of predominantly cobble and gravel sized materials. Geomorphic forcing elements (large wood, boulder, or other) are not present aside from some structures placed in the stream associated with past restoration activities. However, during winter months, ice can potentially act as a geomorphic element to raise water surface elevations and/or redirect water onto adjacent floodplain surfaces and scour bed and bank surfaces. Based on field observation and existing condition floodplain inundation at bank-full, 2-year, and 5-year recurrence interval discharges, the GRR is interpreted to be incised by roughly 3 to 4 feet. In this unconfined reach there is abundant floodplain and relic channel networks that are only activated above moderate flood events (>5-year recurrence). There are areas in the upstream portion of the project of major and minor erosion and active channel migration occurring that impact both private and State lands including a meander bend advancing towards Highway 244. Otherwise the majority of the river corridor is in an arrested state where large wood, water, sediment, and aquatic species are flushed through the project area resulting in a simplified planform with little hydraulic complexity.

Existing riparian vegetation conditions include scattered patches of decadent cottonwood galleries with an understory of woody shrubs and immature trees. These patches are in larger areas of herbaceous vegetation with shallow rooting depths where the floodplain vegetation has been altered by past land use practices including extirpation of beaver, agricultural development, livestock grazing, hydraulic and gravel mining, logging and use of splash dams, and railroad/road construction. Beaver are uncommon since their extirpation in the early 1800s and no longer play a major role in wood delivery to the channel or maintaining diverse off-channel habitats, complex planform, and riparian conditions. Historically, the riparian vegetation would have likely included woody species such as cottonwood, willow, river birch, and alder of varying ages (seral stages). The upland areas adjacent to the active floodplain likely supported mature ponderosa pine. Impacts include the alteration or removal of riparian and floodplain vegetation associated with the implementation of agricultural and grazing practices in addition to commercial logging.

Previous efforts to restore geomorphic and hydraulic processes within the project area have included channel-spanning rock weirs and bank-barbs constructed of rock and wood. While the structures can promote aggradation, with or without widening, they were unsuccessful at significantly altering planform or instream complexity or increasing floodplain inundation.

As described in the purpose and need for this project, the existing river corridor at the project area is out of balance and currently provides poor quality fish habitat and poor water quality (high summer and low winter water temperatures). The Longley Meadows project area encompasses or is immediately adjacent to State Highway 244 and its right-of-way, Oregon Department of Transportation (ODOT) land, USFS

system lands, and lands owned by 3 different private landowners. The area used to analyze potential direct, indirect, and cumulative impacts to adjacent State and private lands from implementation of this project is from the Bear Creek Ranch (upstream and within Longley Meadows) at River Mile 143.7 downstream to the confluence of Spring Creek at River Mile 141.9. As of 80 percent Design, all project elements occur only on USFS property upstream of the La Grande Rifle and Pistol Club, River Mile 142.4.

Environmental Consequences

Methods

The method of analysis included:

- A review of the appropriate Forest Service policy and goals, objectives and standards of the Forest Plan.
- The existing condition was compared with possible changes to adjacent State and private lands/structures use if alternatives were implemented.

Spatial and Temporal Context for Effects Analysis

The spatial context for the analysis is the river and adjacent floodplain along the GRR from river mile 143.7 to river mile 141.9. This area is downstream from the recent BTS project area where instream enhancement work may have the potential to impact downstream landowners and structures (such as corrals, buildings, campgrounds, bridges, etc.). Potential impacts to water quality and soils (turbidity, sediment, erosion, etc.) have been covered separately by resource. This analysis will focus on potential downstream impacts from channel realignment, floodplain improvement, large wood instream structure additions, gravel bar additions/changes, etc.

The environmental effects will be discussed in the following timeframes:

- Short term effects would be those that have the potential to occur within 10 to 15 years following implementation of the project.
- Long term effects would be viewed as a period of time ranging from 15 to 100 years following implementation of the project.

Direct and Indirect Effects to Adjacent Lands/Structures

Alternative 1 – No Action

Bear Creek Ranch (BCR) - No action would likely result in continued erosion and channel migration above, within, and below BCR. On the upstream portion above the BCR property boundary, the river is actively moving northward away from the property. There is very little vegetation to slow the migration rate and larger floods (such as 2011) resulted in the bank receding approximately 60 feet. Within BCR there is active bank erosion on river right including the area at the confluence of Jordan Creek. This has been enhanced by the meander bend upstream redirecting flow and pressure onto the right bank. Deposition from the erosion of the advancing meander bend upstream is occurring within the property and creating dynamic channel behavior with the rock weirs placed as part of a previous restoration effort.

The confluence of Jordan Creek has been largely disconnected at low flows due to sediment being deposited near the confluence. Below BCR a meander bend is advancing rapidly towards

Highway 244. There is a sediment layer that is cohesive that inhibits scouring of a deep pool resulting in additional pressure on the channel bank. There has been placement of riprap in the upstream part of the meander that has been marginally effective at reducing advancement in the riprapped location but has transferred energy downstream in the bend where active erosion is occurring. The bank has little vegetation to resist advancement and as a result the bend is migrating through the old railroad grade and towards the highway. In the short term (10-15 years) continued advancement of the meander bends above and below project will result in dynamic behavior and deposition within BCR. In the long term (50-100 years) the river is trending northward away from BCR and has little vegetation to limit this advancement. There is potential for avulsion (rapid abandonment of a river channel and the formation of a new river channel) of the entire, or a large portion of, GRR through preferential flow paths on the floodplain away from BCR.

An estimated 25-year flood event occurred during spring of 2019 resulting in continued advancement of meander bends and changes to the existing channel. Specific measurements on Bear Creek Ranch have not occurred.

ODOT Right of Way - As mentioned above, the meander bend downstream of the BCR property is advancing towards Highway 244. The meander bend has short-term and long-term potential to advance towards the highway. The river is relatively straight along Highway 244 below the active meander bend and is over-widened/incised in this reach. There are no forcing elements and most sediment, wood, and aquatic species are likely flushed through this reach during floods. At the downstream end of the project below the La Grande Rifle and Pistol Club the river is directed straight at the highway. There are rock barbs/rip rap in this area to protect the highway. However, during flood flows (2-year recurrence and above) there is very little freeboard above the water level and the highway surface elevation. The floodplain upstream of this bend is confined by the presence of the old Mt. Emily railroad grade bridge approach berms. The bridge has washed away but the berms do not allow the river to access the floodplain, focusing flow towards the highway.

The spring 2019 flood event (approximately 25-year flood) resulted in water on top of the road near the La Grand Rifle and Pistol Club). ODOT placed angular riprap on the shoulder of the road in several locations within the project area and in multiple locations up- and downstream.

La Grande Rifle and Pistol Club (LG Rifle & Pistol) - The river above and through most of the property is in an arrested state of development. This is a transport reach where there is little ability for the river to create dynamic behavior. There is likely bedrock control in the channel bed and on the left bank. In the short and long term, the river will likely remain in a static condition.

An estimated 25-year flood event occurred during the spring of 2019 which flooded much of the LG Rifle & Pistol property.

Lands Downstream of the LG Rifle & Pistol - The Hampton property is the nearest downstream private parcel. They also own a steep hill slope that is directly across from Spring Creek within the project area. The Grande Ronde River is mostly confined through this reach and is in an arrested state of development and exhibits little dynamic behavior with the exception of the large bedrock pool located on the property downstream from Spring Creek.

Alternative 2

The proposed project is being designed to have short term stability (i.e. approximately 10-15 years) utilizing numerous engineered log jams (ELJs) and bank protection features to provide

initial horizontal channel and bank stability along with constructed riffles of specific gradation using local river rock sources to provide vertical channel stability. These initial stabilizing elements are very important to project success and are planned to be constructed of local, natural materials, and engineered to be stable through anticipated flood events. Previous projects of this scale in the region have shown that these types of elements are stable up to, and within, extreme flood events.

It is anticipated that some of these ELJ elements would deform and shed individual pieces of wood over time. These potential mobile pieces of wood are typically caught by downstream project elements and remain within the project area; however, individual logs may travel downstream of the project and into BCR and/or the La Grande Rifle Club (and possibly below), in a similar manner as currently occurs under natural conditions. Logs used in the project would be a maximum of 45-feet long and would not be tethered with any non-natural fasteners and are therefore similar to what currently moves through this reach during flood events.

As discussed in the Hydrology and Water Quality sections, some erosion would be expected to occur and is planned for in the design to maintain a natural, balanced supply of sediment in the project reach. Monitoring of several similar scale projects in comparable environments have all shown minimal immediate erosion or instability issues using these techniques. Long-term stability would be provided by healthy riparian vegetation. Riparian vegetation improvement is expected from floodplain restoration and associated hydrology, extensive seeding, plantings and natural recruitment through improved floodplain processes. Alternative 2 has been designed to retain as much existing vegetation (trees, wetlands, and shrubs) as possible, while reestablishing disturbed vegetation through extensive soil treatment, salvage, and replanting efforts. As this is a dynamic river environment, there is always a risk of a historic flood event to occur, which may overwhelm mitigation measures. However, such extreme hydrologic risks have been evaluated and have a low probability of occurrence while vegetation reestablishes.

Hydraulic modeling was used as a tool to modify the design to create a proposed condition that does not exacerbate flooding of the BCR, La Grande Rifle and Pistol Club, and properties/structures located further downstream in comparison to existing conditions. Improved floodplain interaction may reduce flood potential downstream during smaller high water/flood events. No project elements were designed or constructed on BCR during the BTS project and none are proposed under Longley Meadows. Other project elements (e.g., side channels) that are designed to provide additional floodplain interaction are routed back to the mainstem Grande Ronde below BCR. These side channels would likely remove pressure from the actively eroding banks on BCR by routing flow through the channels and floodplain away from BCR. The historic railroad grade that currently provides floodplain protection to parts of BCR and Highway 244 would remain intact within this area and continue to provide protection. Modeling results show nearly identical flood patterns in areas downstream of the proposed project for a 100-year flood event compared to existing conditions. Any future changes to flood patterns within BCR and the La Grande Rifle Club lands would most likely be dependent upon physical changes that may or may not occur regardless of project actions, as described previously.

Monitoring of the partially-constructed BTS project during the 25-year event during spring 2019 confirmed that ELJ design successfully retained large woody debris in place throughout the event. Some smaller materials were loosened; however, many were caught in and retained in ELJs downstream from where the materials originated. During this event, several trees/woody debris that originated upstream of the BTS project area were retained on constructed project elements that would likely have traveled further downstream.

Additionally, the project itself would counteract historic practices that have resulted in a disconnected floodplain, poor groundwater and water temperature conditions, significant loss of pool habitat and aquatic habitat diversity and complexity, and loss of healthy conditions that provide diversity and structural stability. The project has been designed, and would be implemented, with extensive best management practices (BMPs) to provide construction-related mitigation including:

- Protecting and avoiding existing riparian tree and shrub vegetation.
- Limiting disturbance to minimum footprint as necessary to minimize disturbance to soils and vegetation.
- Confining staging areas, stockpiles, and fueling locations to areas greater than 150 feet from open water.
- Implementation of erosion control methods including work area isolation, mulching, and seeding disturbed areas to facilitate vegetation reestablishment.
- Limiting access road density and fully reclaiming to promote vegetation reestablishment.

Additional details are provided in the Basis of Design Report (BDR) in the project record. These include measures required by USFS resource specialists and BPA's Habitat Improvement Project (HIP) Programmatic to ensure short-term project impacts are minimized to the extent practicable while the project provides overall long-term benefits.

Cumulative Effects on Adjacent Lands/Structures

Alternative 1 – No Action

There would be no cumulative effects to adjacent lands and structures beyond what would normally occur if no action were implemented within the Longley Meadows project area.

Alternative 2

Project design of the Longley Meadows and BTS Fish Habitat Enhancement projects in combination with scheduled regular maintenance along the highway has the potential to increase protection of the Hwy 244 road surface and features in the right-of-way during flood and ice flow events.

The BTS Fish Habitat Enhancement project has introduced more large wood to the river system, and the Longley Meadows project would further contribute to that quantity. While extreme flow events have the potential to dislodge logs from these project structures, other logs coming from upstream sources would likely be caught and retained by the project structures, resulting in minimal change to the amount of wood observed downstream of both projects. Similarly, these projects would both improve floodplain interaction and provide more area for flood flows to spread and dissipate energy, potentially decreasing downstream flooding impacts.

Appendix A – Cumulative Effects Analysis

Project	Potential Effects	Overlap APE in:		Measurable Cumulative Effect?	Effects
		Time	Space		
Noxious Weed Management W-W Invasive Species Treatment ROD	Reduction of invasive species competition	Yes	Yes	No	
Vegetation Management: BTS Fuel Reduction Proj BTS Campgrnd Project Spring Crk Small Sale		Yes	No	No	Floodplain areas not entered under FPlan RHCA no activity buffers.
Special Uses: <ul style="list-style-type: none"> • OTEC Powerline • Fly Fishing O/G Permit • LG Rifle & Pistol Club 		Yes	Yes	No	There will be direct effects on the Rifle and Pistol Club; however, the Longley project in combination with the Rifle and Pistol Club activities would not create a cumulative effect on adjacent lands and structures.
Recreation – BTS Interpretive Trail		Yes	Yes	No	
Recreation- Dispersed Camping		Yes	Yes	No	
Recreation- Snowmobile Trails		No	No	No	
Recreation -Firewood Cutting		No	No	No	Firewood cutting not permitted in floodplains
Recreation – OHV Use		Yes	Yes	No	
Recreation – BTS Campground		Yes	Yes	No	
Roads & Trails – Travel Management Plan		Yes	Yes	No	
Road Maintenance On Hwy 244	Improved protection during ice/flood events	Yes	Yes	Yes	Project design for the Longley and BTS Fish Habitat Enhancement projects in combination with scheduled regular maintenance has the potential to increase protection of Hwy 244 during flood and ice events.
Roads – Danger Tree Removal		Yes	Yes	No	
Grazing Allotment – Spring Creek Sheep Allotment		No	No	No	
Fisheries Enhancement – Fish logs from BTS Campground Bird Track Springs Fish Habitat Enhancement	Potential for more logs downstream	Yes	Yes	Yes (BTS Fish Habitat Enhancement Project only)	Instream enhancement work on both of these projects would increase large wood in the system; however, strategic wood structure design would minimize the downstream transport of materials (likely still less than historic levels of wood transport through the system).
Wildlife Enhancement – GG Owl Platforms Aspen Enhancement		No	No	No	

Project	Potential Effects	Overlap APE in:		Measurable Cumulative Effect?	Effects
		Time	Space		
Mining		No	No	No	
Private Land Activities •Private Structures •Roads •Grazing		No	No	No	